March 29, 1932. J. P. TARBOX 1,851,023

METAL BLANK AND METHOD OF FORMING SAME

Filed Feb. 6, 1930

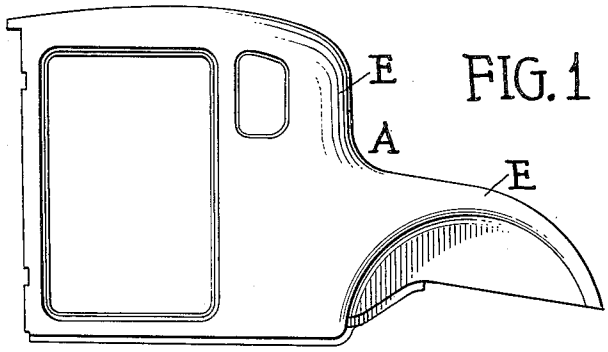

FIG. 1

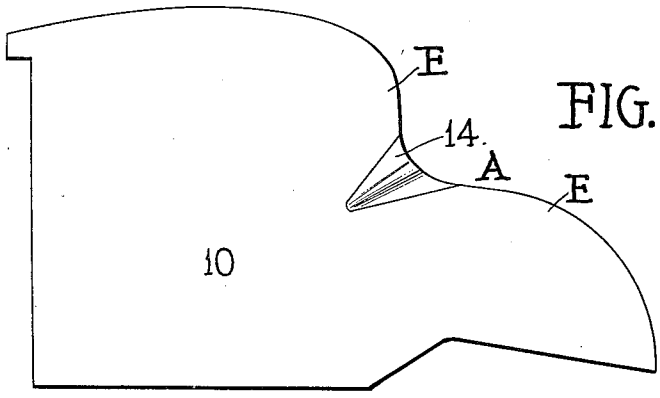

FIG. 4.

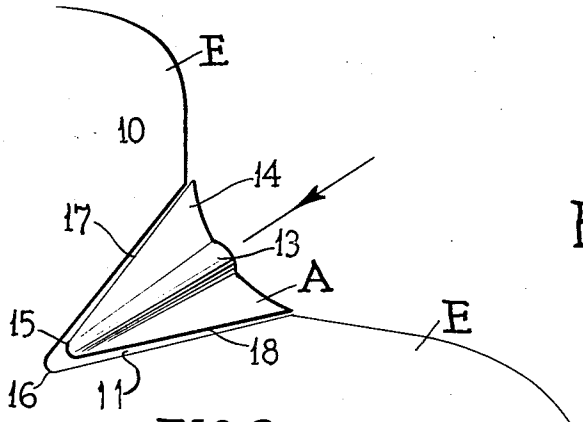

FIG. 2

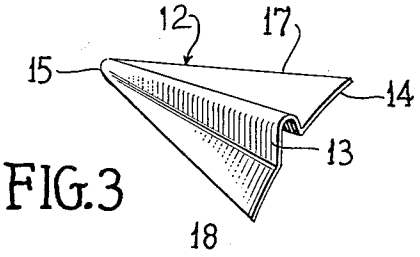

FIG. 3

INVENTOR.

John P. Tarbox

Patented Mar. 29, 1932

1,851,023

UNITED STATES PATENT OFFICE

JOHN P. TARBOX, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO EDWARD G. BUDD MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

METAL BLANK AND METHOD OF FORMING SAME

Application filed February 6, 1930. Serial No. 426,242.

The present invention relates to formable blanks in which portions of the material of the blanks are drawn laterally to the main body thereof at an angle to each other and to the method of manufacturing such blanks.

In the employment of such blanks for construction purposes, considerable strain is placed on the material of the blanks at the juncture between the angularly related laterally drawn portions with a consequent weakening and frequent breaking of the material at such junctures. This is particularly true in the manufacture of metallic coupé bodies in which draws of comparatively great depth are encountered at the juncture between the rear quarter of the body and the side panels of the deck.

These problems have been solved for a window frame construction by the invention disclosed in the patent to G. W. Wells, No. 1,545,021, issued July 7, 1925, by the insertion of gussets in notches formed in a blank at the prospective juncture between flanges to be laterally drawn into angular positions to each other, said gussets being of greater transverse fullness than the width of the notches when in blank and adapted when drawn over to fill the space between the edges of the notches and complete the formation of the corners without break or objectionable strain on the material of the frame.

Owing to the construction of the notches of the Wells invention, it does not lend itself to manufacture by flash welding processes which is desirable under certain circumstances where it is important to provide with thoroughness and precision, a juncture between portions having their surfaces in the same continuous, smooth and uninterrupted plane at the said juncture.

Objects of the present invention are, therefore, to provide a novel and improved process for the manufacture of formable blanks having sufficient fullness at the locations of angular draws to substantially eliminate all undue strain on the material due to the forming of such draws, in which process flash welding may be efficiently employed for connecting the parts; and to provide an improved construction in blanks of this character such as will lend itself to the facilitative and effective formation by the said process.

These objects are accomplished in a manner as will hereinafter appear, and the invention will now be described in connection with the accompanying drawings illustrating an application of the invention to a vehicle body. In the drawings,

Fig. 1 shows the blank of an automobile body after having been drawn into shape.

Fig. 2 shows the initial formation of the main body of the blank in the flat, with the gusset juxtaposed thereto in the position for initiation of welding.

Fig. 3 is a detail showing, in perspective of the gusset.

Fig. 4 is a view showing the sections secured together, and constituting the completed blank.

In Fig. 1 is shown the side of an automobile coupé, made from a single stamping. The margins E at the rear quarter and the angle A between the top and the deck are deep drawn, sometimes as much as five or six inches. My invention finds application at the angle A to prevent splitting or creasing or other irregularities.

The main body of the blank 10 of the invention is cut from flat stock to proper outline, and simultaneously or subsequently thereto, is formed recess or cut away 11. In this recess is then secured the supplemental section 12 which has previously been cut from stock and shaped with a crease or fold 13 adapted to be straightened out in drawing the blank into shape over a form. The edges of the recess are connected with the adjacent edges of the section 12 preferably by flash welding, in order that the surfaces of the connected main body and section may be maintained at their juncture in the same unobstructed smooth plane. In order that the edges of section 12 may be effectively flash welded to the edges of the recess in the blank without welding imperfections at the juncture in the finished product, the angle between the sides 17 and 18 of the section 12 to be connected is of greater spread than that between the corresponding edges of the recess so that the welding arc will begin op-

eration between the portions of the section and recess adjacent the bases 14, progressing toward the apices 15 and 16. In this manner undue burning away of the metal adjacent the apices is prevented and this increased spread between the edges of the section may be so determined that when the edges meet, a perfect fit will result. The apices 15 and 16 may be slightly rounded, as shown, to the same ends. The weld is cleaned up in any known manner.

The crease or fold 13 extends from the apex 15 of the section 12 to a point on the base 14 ordinarily bisecting the angle at the apex and extending in perpendicularity to the base.

This crease is also characterized by being progressively increased in fullness from the apex where the strain in blanks of usual construction is least to the base or outer edge 14 where the strain is greatest, the increment in the fullness being proportioned at any point to the strain to be relieved. The crease may be formed either before or after the edges of the section are trimmed as may be found expedient, and the crease or fold may be provided in any suitable manner as by being formed in dies, drawn, or folded.

The connection between the main body of the blank and the supplemental section having been made in this manner, the blank is ready for shaping into its final form which is done by the usual methods of drawing the same in dies. During the shaping of the portions at the bends as set forth above, the crease or fold in the supplemental blank will be straightened out and will assume the shape of the acute angle draw without undue strain upon or breaking of the metal. In this manner not only is the acute angled draw more easily formed, but a neater finish of the product is produced.

It will be understood that the embodiment of the invention herein illustrated and described may be varied from the specific showing and may have a wide range of application both in the matter of material used in formation of the blank, in the position and shape of the supplemental section and in the kind of article to be formed from the blank. I do not wish to be limited, therefore, in the scope of the invention except by the state of the art and the appended claims.

What I claim is:

1. The process of connecting a supplemental section of sheet metal in a recess in the body of a blank of like material, which consists in forming said recess with relatively sharply converging edges, forming the section with edges converging at a wider angle than that between the edges of the recess, and flash welding said edges together, the flash welding proceeding while relatively approaching the blank and section substantially along the bisector of the angle formed by said converging edges.

2. The process of forming a sheet metal blank having a main body and portions to be bent therefrom at angles and in intersecting planes, which consists in shaping the blank with a recess having relatively sharply converging edges, forming a creased supplemental section with side edges converging at a wider angle than that between the edges of the recess, and flash welding the converging edges of the section to those of the recess, the flash welding proceeding while relatively approaching the blank and section along substantially the bisector of the angle formed by said converging edges.

3. The process of providing and shaping a sheet metal blank having portions bent from the main body thereof into intersecting planes, consisting in forming the main body of the blank with a recess having relatively sharply converging edges at the location of prospective intersection, filling the recess with a supplemental section of greater transverse fullness than that of the recess, and of which the edges converge at a wider angle than those of the recess, flash welding the edges of the recess and section together while relatively approaching the main body of the blank and said supplemental section substantially along the bisector of the angle formed by said converging edges, bending the said portions into intersecting planes and forming the supplemental section to the angle between said planes.

4. A formable sheet metal blank consisting of a main body portion having a recess therein with relatively sharply converging edges, a supplemental section in said recess having similar converging edges flash welded to the edges of the recess to form with the main body portion a unitary blank of substantially uniform gauge throughout, said section having greater transverse fullness than the recess.

In testimony whereof I hereunto affix my signature.

JOHN P. TARBOX.